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Remarks:

Claims 1, 7, 11, 16, 21 and 25 have been amended. Accordingly, claims 1-28 are currently pending for consideration.

I. Amendments:

Amended claim 1 now recites that the polysaccharide has a first cationic or anionic substituent having an aromatic group. Support for amended claim 1 can be found throughout the specification and, more specifically, at page 4, lines 2-13; page 7, lines 25-27; page 8, lines 34-36; and page 9, lines 10-32. Accordingly, no new matter has been added.

Amended claims 7 and 16 have been amended to correct a typographical error. Again, no new matter has been added.

Amended claim 11 now recites a polysaccharide that has a first cationic or anionic substituent having an aromatic group. Support for amended claim 1 can be found throughout the specification and, more specifically, at page 4, lines 2-13; page 7, lines 25-27; page 8, lines 34-36; and page 9, lines 10-32. No new matter has been added.

Amended claim 21 recites that the one or more polysaccharides is reacted with at least one cationic or anionic first aromatic agent. Support for amended claim 1 can be found throughout the specification and, more specifically, at page 4, lines 2-13; page 7, lines 25-27; page 8, lines 34-36; and page 9, lines 10-32. No new matter has been added.

Amended claim 25 recites that the product is obtained by reacting a first polysaccharide with at least one cationic or anionic first aromatic agent. Support for amended claim 1 can be found throughout the specification and, more specifically, at page 4, lines 2-13; page 7, lines 25-27; page 8, lines 34-36; and page 9, lines 10-32. Again, no new matter has been added.

II. The Invention:

The presently claimed invention is directed to a cationised polysaccharide product that includes: a polysaccharide having at least one first cationic or anionic substituent having an aromatic group and at least one second substituent having no

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aromatic group, in a specified molar ratio (claim 1); or one or more polysaccharides having at least one first cationic or anionic substituent having an aromatic group and one or more polysaccharides having at least one second substituent having no aromatic group (claim 2).

The presently claimed invention is also directed to a cationised polysaccharide product obtained by reacting: one or more polysaccharides with at least one cationic or anionic first aromatic agent and at least one second non-aromatic agent, in a specified molar ratio (claim 21); or a first polysaccharide with at least one cationic or anionic first aromatic agent and a second polysaccharide with at least one second non-aromatic agent, and then mixing the polysaccharides obtained (claim 25).

The polysaccharide product containing a combination of aromatic and non-aromatic substituents, as presently claimed, shows improvements in burst strength index, dewatering time and/or retention, when used in a process for the production of paper, compared to prior art polysaccharides used for such a purpose.

III. Rejections:

Claims 1-28 stand rejected under 35 U.S.C. § 112, first paragraph, because (according to the Office Action) the specification does not reasonably provide enablement commensurate in scope with the claims. Specifically, the Office Action contends that the specification does not reasonably provide enablement for any aromatic or any non-aromatic substituents and that a person of skill in the art would have to engage in undue experimentation to practice the invention commensurate in scope with the claims. The Applicants respectfully traverse.

Initially, the Applicants point out that the Office Action acknowledges (at page 2) that the specification is enabling for the substituents identified in the working examples and specifically claimed in dependent claims 5, 8-9, 14 and 17-18, yet all of the claims have been rejected as not being enabled.

In applying the *In re Wands* (8 USPQ2d 1400 (CAFC 1988)) factors, to support its conclusion that a person of skill in the art would have to engage in undue experimentation to practice the claimed invention, the Office Action focuses on and repeatedly contends that the claims are overly broad, i.e., can encompass thousands

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of permutations, and that there is only one aromatic substituent and one non-aromatic substituent exemplified.

In *Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*, 224 USPQ 400, 413-414 (Fed. Cir. 1984), the court held that the district court did not err in finding the patent specification enabling even though it listed elements that could form thousands of end products some of which may not be operative. It is not a function of the claims to specifically exclude possible inoperative substances. *Id.* at 414. Further, use of only prophetic examples does not automatically make a patent non-enabling. *Id.* at 414.

Moreover, a large number of working examples are not required to satisfy section 112, first paragraph, in the case of broad claims. *In re Strahilevitz*, 212 USPQ 561, 563 (CCPA 1982). The disclosure in the specification can provide the teachings necessary to enable one skilled in the art to practice the invention.

In the instant application, the specification provides instruction as to the selection of the aromatic and non-aromatic substituents and as to how the cationised polysaccharides are prepared. In that regard, the specification teaches that the substituents can be attached by a heteroatom (see page 5, lines 11-24).

The specification also identifies exemplary aromatic groups that can be used in the first substituent (see page 5, lines 25-30). It also identifies preferred and more preferred substituents that contain an aromatic group, as well as preferred aromatic groups for the preferred substituents (see page 5, line 31 to page 6, line 12). Moreover, it identifies preferred cationic and anionic aromatic agents that can be used to prepare the cationised polysaccharide products (see page 9, lines 17-32).

The specification also identifies exemplary non-aromatic groups that can be used in the second substituent (see page 6, lines 13-18). It also identifies preferred and more preferred substituents that contain no aromatic group, as well as preferred non-aromatic groups for the preferred substituents (see page 6, lines 19-39). Moreover, it identifies preferred non-aromatic agents that can be used to prepare the cationised polysaccharide products (see page 9, line 33 to page 10, line 24).

Although the application does not include working examples of a large number of aromatic and non-aromatic substituents, the specification does identify a significant number of preferred aromatic and non-aromatic substituents/agents.

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Moreover, the Office Action acknowledges (at page 3) that the relative skill in the art is high. Accordingly, Applicants respectfully submit that specification does enable a person of skill in the art to practice the invention commensurate in scope with the claims, without the need for undue experimentation.

Therefore, it is respectfully requested that the rejections of claims 1-28 under 35 U.S.C. § 112, first paragraph, be withdrawn.

Claims 1-4, 6, 8, 12, 15-17 and 19-23 stand rejected under 35 U.S.C. § 102(b), as being anticipated by Matsunaga Y et al. (JP 621149702, English Translation). The Applicants respectfully traverse.

Matsunaga et. al. is directed to a method for preventing the re-solidification of a cationized starch solution used as a strength additive of surface coating agent in the paper making industry.

Nowhere do Matsunaga et al. disclose a cationized polysaccharide product that includes a cationic or anionic substituent having an aromatic group; or reacting a polysaccharide with a cationic or anionic aromatic agent and a non-aromatic agent to form a cationized polysaccharide, as presently claimed.

Accordingly, it is respectfully requested that the rejections of claims 1-4, 6, 8, 12, 15-17 and 19-23 under 35 U.S.C. § 102(b), as being anticipated by Matsunaga Y et al., be withdrawn.

Claims 5, 7, 9-11, 13-14, 18 and 24-28 also stand rejected under 35 U.S.C. § 103(a), as being obvious over, Matsunaga et al., in view of Persson et al (WO 99/55964). The Applicants respectfully traverse.

Persson et al. is directed to a process for the production of paper from a suspension, which includes adding to the suspension a drainage and retention aide that includes a cationic or amphoteric polysaccharide, and forming and dewatering the suspension on a wire. The cationic polysaccharide has a hydrophobic group.

Nowhere do Persson et al. disclose a cationized polysaccharide product which includes a polysaccharide having (i) at least one first cationic or anionic substituent having an aromatic group and (ii) at least one second substituent having no aromatic group, as presently claimed.

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At page 9, the Office Action identifies one embodiment of Persson et al. that discloses non-aromatic substitution by a cationic agent, i.e., halohydroxypropyltrialkylammonium halide which is of the general formula (II) of the present invention and aromatic substitution by a non-ionic agent being an aralkyl halide such as benzyl chloride. However, this aromatic substituent is not cationic or anionic as required in the amended claims.

Consequently, there is no teaching or suggestion in Matsunaga et al. or Persson et al, when read separately or together, of a polysaccharide having both a first cationic or anionic substituent having an aromatic group and a second substituent having no aromatic group, as presently claimed. Accordingly, the Applicants respectfully submit that the claims (as presently amended) are not rendered obvious by Matsunaga et al., in view of Persson et al..

Moreover, the use of both the first and second substituents provides unexpected results. In that regard, Example 2 (Table 1) of the present invention clearly shows that when comparing the performance of : 1) Ref.3, i.e., a cationic starch being made by reacting native starch with a cationic aromatic agent (represented by 3-chloro-2-hydroxypropyl dimethyl benzyl ammonium chloride); and 2) the invention, i.e., a cationic starch made by reacting native starch with a cationic aromatic agent (represented by 3-chloro-2-hydroxypropyl dimethyl benzyl ammonium chloride) and a non-aromatic agent (represented by 2,3-epoxypropyl trimethyl ammonium chloride), the cationic starch according to the invention gives much better results in terms of Burst Strength Index Increase.

Therefore, it is respectfully submitted that the present invention shows unexpected results for a process using the polysaccharide.

Accordingly, it is respectfully requested that the rejections of claims 5, 7, 9-11, 13-14, 18 and 24-28 under 35 U.S.C. § 103(a), as being obvious over Matsunaga et al., in view of Persson et al., be withdrawn.

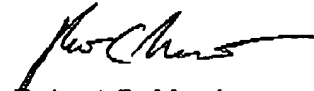
Conclusion:

In light of the foregoing, Applicants respectfully submit that the application as amended is now in proper form for allowance, which action is earnestly solicited. If

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the Examiner has any questions relating to this Amendment or to this application in general, it is respectfully requested that the Examiner contact Applicants' undersigned attorney at the telephone number provided below.

Respectfully submitted,



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